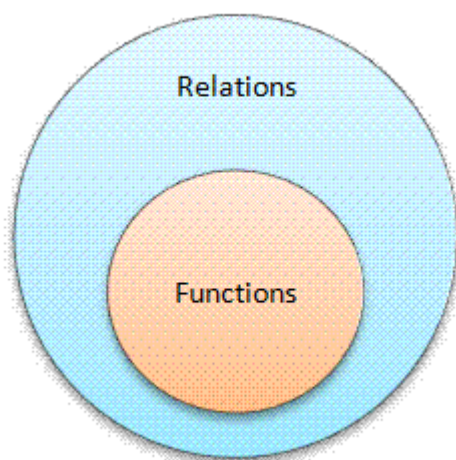
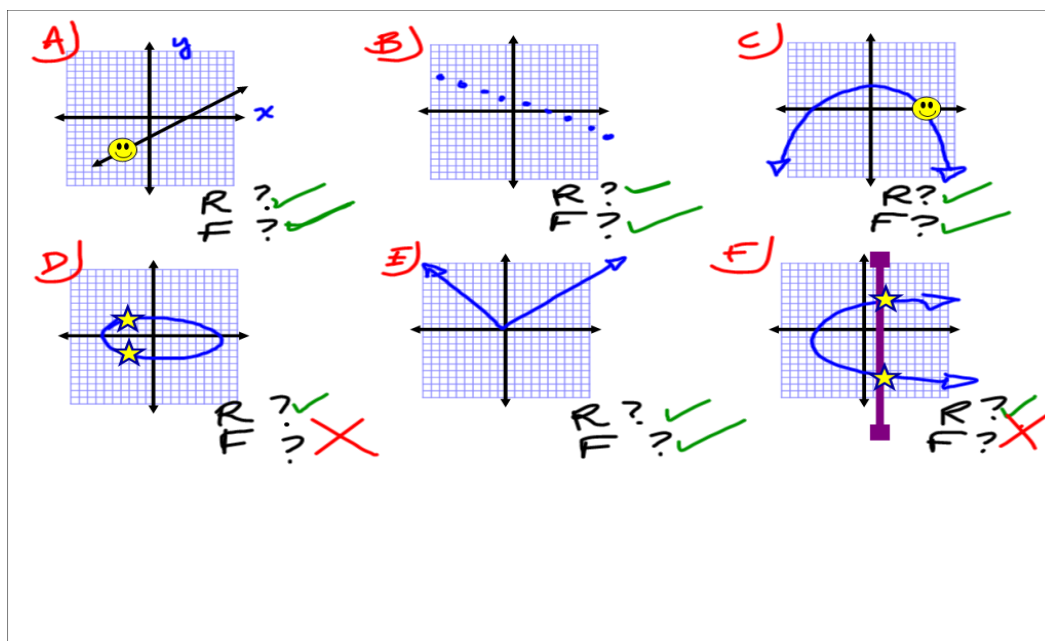


Name: _____

Period: _____

Foundations and Pre-Calc 10

Ch. 5 Relations and Functions



Name: _____

Math 10F & PC H.

Date: _____

Chapter Ch.5 Relations and Functions

5.1 - Representing Relations**Goal:** Represent relations in different ways.*A relation can be expressed in a number of ways. Some of the ways you used above are:*

1. a set of ordered pairs $(3,7), (4,9)$
2. a graph
3. Equations
2. a word description
3. a table
6. Arrow Diagram

A set is a collection of data $\{(3,4), (4,7), (5,8), \dots\}$ **An element** one object in the set**A relation** associates the elements of one set with another element of another set.**Domain (x)** All the x-values in one set**Range (y)** All the y-values in one set**Example #1:** Animals can be associated with the classes they are in.

x Animal	y Class
Ant	Insect
Eagle	Aves
Snake	Reptilian
Turtle	Reptilian
Whale	Mammalian

A) **Represent the relation in words:** the relation shows the association "belongs to the class" between a set of animals and set of classes

B) **Represent this relation as** i) a set of ordered pairs

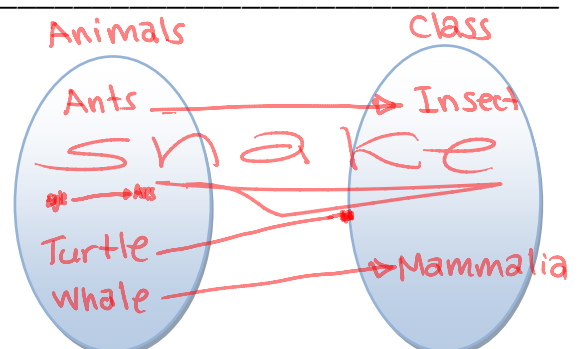
$\{(ant, Insect), (Eagle, Aves), (Snake, Reptilian), \dots\}$

ii) **as an arrow diagram**

Belongs to the Class

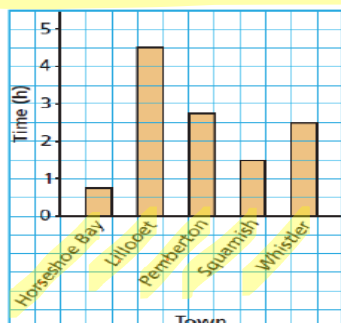
Ovals - Represent the sets

Arrows - Associates an element of the first set with an element of the second set.



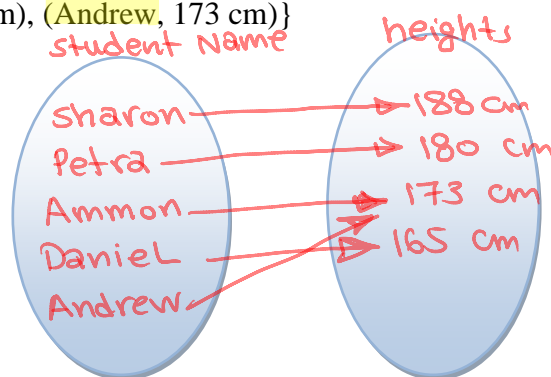
Example #2: A) Describe the relation represented by the bar graph

Average Travel Time to Vancouver



The relation shows the association "Ave. time" From different cities in BC. to Vancouver

Example #3: This set of ordered pairs shows the heights of 5 students: {(Sharon, 188 cm), (Petra, 180 cm), (Ammon, 173 cm), (Daniel, 165 cm), (Andrew, 173 cm)}
Represent the relation as an arrow diagram.



Example #4: Determine the rule in the following tables:

x	y
1	4
2	8
3	12
4	16
5	20

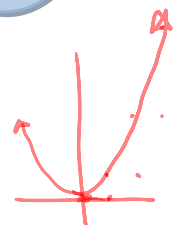
$$y = 4x$$

x	y
1	3
2	5
3	7
4	9
5	11

$$y = 2x + 1$$

x	y
1	1
2	4
3	9
4	16
5	25

$$y = x^2$$



x	y
1	1
2	4
3	7
4	10
5	13

$$y = 3x - 2$$

x	y
1	-3
2	-5
3	-7
4	-9
5	-11

$$y = -2x - 1$$

x	y
1	-1
2	2
3	7
4	14
5	23

$$y = x^2 - 2$$

Example #5: Determine the domain and range of the ordered pairs

A (3, 4), (-3, 6), (4, 8), (2, -2)

$$D: \{x | 3, -3, 4, 2\}$$

$$R: \{y | 4, 6, 8, -2\}$$

B (-3, -1), (5, 5), (0, 3), (5, -3)

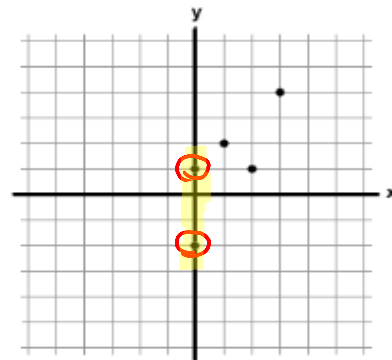
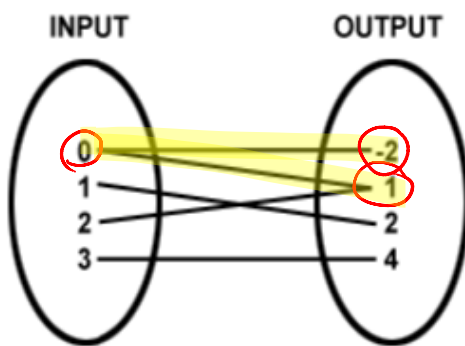
$$\text{Domain} : (-3, 5, 0, 5)$$

$$\text{Range} : (-1, 5, 3, -3)$$

Relations

A relation is a set of inputs and outputs, often written as ordered pairs (input, output).

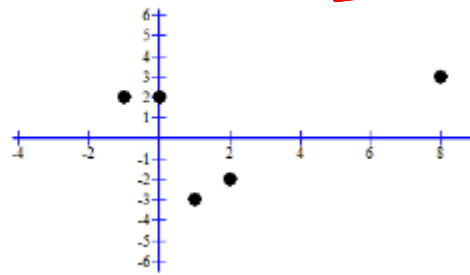
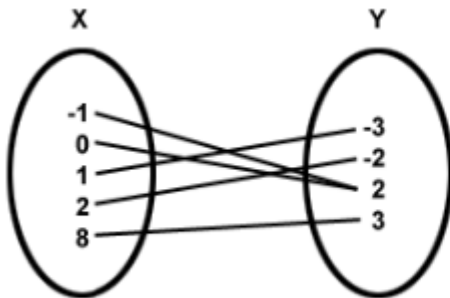
We can also represent a relation as a mapping diagram or a graph. For example, the relation can be represented as:



relation

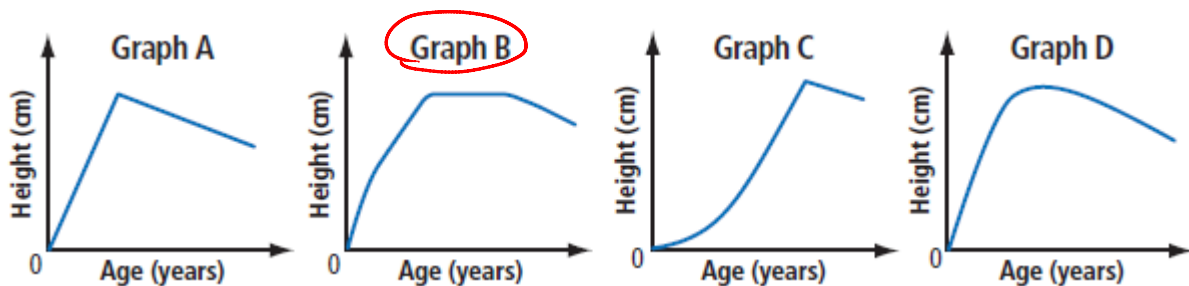
Function

A function is a relation in which each input x (domain) has only one output y (range).

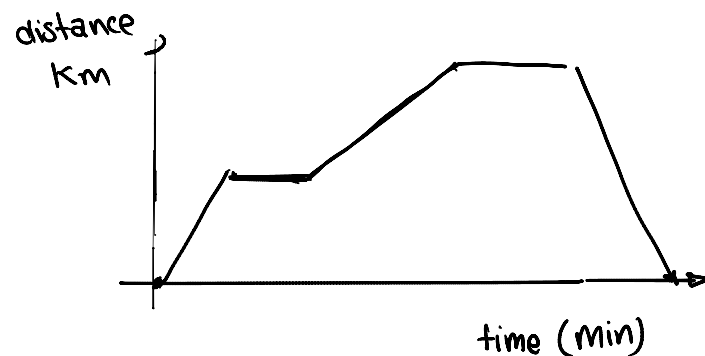
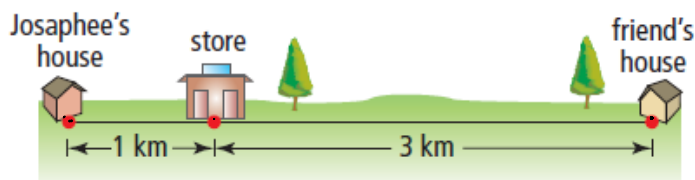


Function

Example #6: Which graph best represents a person's height as the person ages? Explain your choice.



Example #7: Josaphee leaves her home and walks to the store. After buying a drink, she slowly jogs to her friend's house. Josaphee visits with her friend for a while and then runs directly home. Using the distances shown, draw a distance-time graph that shows Josaphee's distance from the store. Explain each section of your graph.



Assignment p. 262 Q#3, 4, 6 –10